Canada. Mineral Resources Division
The Canadian Mineral Industry

CANADA
DEPARTMENT OF MINES
MINES BRANCH
HON. WILLIAM TEMPLEMAN, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;
EUGENE HAANEL, PH.D., DIRECTOR.

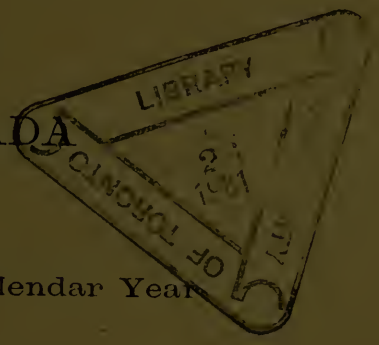
A GENERAL SUMMARY

OF THE

MINERAL PRODUCTION

OF

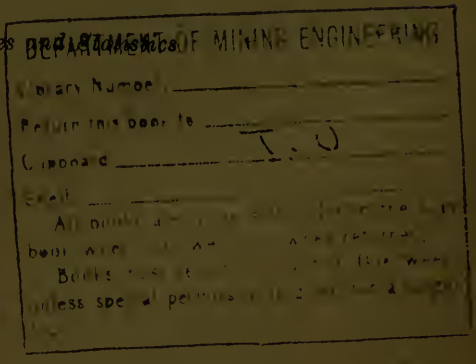
CANADA



During the Calendar Year

1910

JOHN McLEISH, B.A.
Chief of the Division of Mineral Resources and Statistics



OTTAWA
GOVERNMENT PRINTING BUREAU
1911

No. 117

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THE

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1910.

General Summary.

The total value of the mineral production in Canada in 1910, according to revised statistics now complete, was $106,823,623: a value slightly greater than the estimate of production published on the 1st of March. Compared with the previous year's production of $91,831,441, that of 1910 shows an increase of $14,992,182, or 16 per cent, and is the largest increase that has been recorded in Canada's mineral production in any one year. The production per capita has also increased from $12.82 in 1909, to $14.26 in 1910, an advance of 11·2 per cent. The largest production per capita previously recorded was $13.35 in 1907.

The year 1886 was the first year for which complete statistics of mineral production for the whole of Canada were collected by this Department, and the production that year was reported as $10,221,255, or about $2.23 per capita. In ten years the production had increased over 100 per cent, to $22,474,256, or $4.38 per capita, in 1896. At this time, the Yukon began to contribute largely to the gold production, and, during the next five years, an increase of nearly 200 per cent is shown, the total reaching a value of $65,797,911, or $12.25 per capita in 1901. The next three years witnessed a slight falling off, but from 1904 the production again rapidly increased to its present high record.

Annual Mineral Production in Canada since 1886.

Year.	Value of Production.	Value per Capita.	Year.	Value of Production.	Value per Capita.
	$	$ cts.		$	$ cts.
1886	10,221,255	2 23	1899	49,234,005	9 27
1887	10,321,331	2 23	1900	64,420,877	12 04
1888	12,518,894	2 67	1901	65,797,911	12 25
1889	14,013,113	2 96	1902	63,231,836	11 55
1890	16,763,353	3 50	1903	61,740,513	11 03
1891	18,976,616	3 92	1904	60,082,771	10 36
1892	16,623,415	3 39	1905	69,078,999	11 35
1893	20,035,082	4 04	1906	79,286,697	12 55
1894	19,931,158	3 98	1907	86,865,202	13 35
1895	20,505,917	4 05	1908	85,557,101	12 32
1896	22,474,256	4 38	1909	91,831,441	12 82
1897	28,485,023	5 49	1910	106,823,623	14 26
1898	38,412,431	7 32			

Comparative Statement of Mineral

No.	Product.		1909. Quantity.	Value. (a)	Per cent of total.
	Metallic.	*		$	%
1	Antimony ore	Tons.	35	1,575	.....
2	" refined	Lbs.	61,207	4,285	.....
3	Cobalt (i)	"	.....	94,609	0·10
4	Copper (b)	"	52,493,863	6,814,754	7·42
5	Gold	Ozs.	453,865	9,382,230	10·21
6	Pig iron from Canadian ore (c)	Tons.	149,444	2,222,215	2·41
7	Iron ore (exports)	"	21,965	61,954	.....
8	Lead (d)	Lbs.	45,857,424	1,692,139	1·84
9	Nickel (e)	"	26,282,991	9,461,877	10·30
10	Silver (f)	Ozs.	27,529,473	14,178,504	15·43
11	Zinc ore	Tons.	18,371	242,699	0·26
	Total		.....	44,156,841	48·08
	Non-Metallic.				
12	Actinolite	Tons.	.....	.....	.....
13	Arsenic	"	.....	67,446	.....
14	Asbestos	"	63,349	2,284,587	2·48
15	Asbestic	"	23,951	17,188	.....
16	Chromite	"	2,470	26,604	.....
17	Coal	"	10,501,475	24,781,236	26·98
18	Corundum	"	1,491	162,492	0·17
19	Feldspar	"	12,783	40,383	.....
20	Fluorspar	"	.....	.....	.....
21	Graphite	"	864	47,800	.....
22	" artificial	"	257	.....	.....
23	Grindstones	"	4,275	54,664	.....
24	Gypsum	"	473,129	809,632	0·88
25	Magnesite	"	330	2,508	.....
26	Mica	"	369	147,782	0·16
	Mineral pigments—				
27	Barytes	"	179	1,120	.....
28	Ochres	"	3,940	28,093	.....
29	Mineral water	.....	.....	175,173	0·19
30	Natural gas (g)	.....	.....	1,207,029	1·31
31	Peat	"	60	240	.....
32	Petroleum (h)	Bls.	420,755	559,604	0·60
33	Phosphate	Tons.	998	8,054	.....
34	Pyrites	"	64,644	222,812	0·24
35	Quartz	"	56,924	71,285	.....
36	Salt	"	84,037	415,219	0·45
37	Talc	"	4,350	10,300	.....
38	Tripolite	"	.....	.....	.....
	Total		.....	31,141,251	33·91

* Short tons throughout.

(a) The metals copper, lead, nickel, and silver are for statistical and comparative purposes valued at the final average value of the refined metal. Pig iron is valued at the furnace, and non-metallic products at the mine or point of shipment.

(b) Copper content of smelter products and estimated recoveries from ores exported, at 12·982 cents per pound, in 1909; and 12·738 cents per pound in 1910.

(c) The total production of pig iron in Canada in 1909 was 757,162 tons valued at $9,581,864, of which it is estimated 607,718 tons valued at $7,359,649 should be credited to imported ores; in 1910, the total production was 800,797 tons valued at $11,245,622, of which 695,891 tons valued at $9,594,773 are credited to imported ores.

(d) Refined lead and lead contained in base bullion exported at 3·692 cents per pound, in 1909; and 3·687 cents in 1910, the average prices in Toronto.

Production for Years 1909 and 1910.

1910.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).		No.
Quantity.	Value (a).	Per cent of total.	Quantity.	%	Value.	%	
	$	%			$		
364	13,906	.....	+ 329	.....	+ 12,331	.....	1
.....	.....	.....	− 61,207	.....	− 4,285	.....	2
.....	51,986	.....	.....	.....	− 42,623	45·05	3
55,692,369	7,094,094	6·64	+ 3,198,506	6·09	+ 279,340	4·10	4
493,707	10,205,835	9·55	+ 39,842	8·78	+ 823,605	8·78	5
104,906	1,650,849	1·54	− 44,538	29·80	− 571,366	25·71	6
114,449	324,186	0·30	+ 92,493	.....	+ 262,232	.....	7
32,987,508	1,216,249	1·13	− 12,869,916	28·07	− 475,890	28·12	8
37,271,033	11,181,310	10·46	+ 10,988,042	41·81	+ 1,719,433	18·17	9
32,869,264	17,580,455	16·45	+ 5,339,791	19·40	+ 3,401,951	23·99	10
5,063	120,003	0·11	− 13,308	72·44	− 122,696	50·55	11
.....	49,438,873	46·28	.....	.....	+ 5,282,032	11·96	
30	330	.....	+ 30	.....	+ 330	.....	12
2,049	81,044	.....	.....	.....	+ 13,598	20·16	13
77,508	2,555,974	2·39	+ 14,159	22·35	+ 271,387	11·88	14
24,707	17,629	.....	+ 756	3·16	+ 441	2·57	15
299	3,734	.....	− 2,171	87·89	− 22,870	85·96	16
12,909,152	30,909,779	28·93	+ 2,407,677	22·93	+ 6,128,543	24·73	17
1,870	198,680	0·18	+ 379	25·42	+ 36,188	22·27	18
15,809	47,667	.....	+ 3,026	23·67	+ 7,284	18·04	19
2	15	.....	+ 2	.....	+ 15	.....	20
1,392	74,087	.....	+ 528	61·11	+ 26,287	54·99	21
1,221	.....	.....	+ 964	.....	.....	.....	22
3,973	47,196	.....	− 302	7·06	− 7,468	13·66	23
525,246	934,446	0·87	+ 52,117	11·02	+ 124,814	15·42	24
323	2,160	.....	− 7	2·12	− 348	13·88	25
.....	190,385	0·17	.....	.....	+ 42,603	28·83	26
0	0	.....	− 179	.....	− 1,120	.....	27
4,813	33,185	.....	+ 873	22·16	+ 5,092	18·13	28
.....	199,563	0·18	.....	.....	+ 24,390	13·92	29
.....	1,346,471	1·26	.....	.....	+ 139,442	11·55	30
841	2,604	.....	+ 781	.....	+ 2,364	.....	31
315,895	388,550	0·36	− 104,860	24·92	− 171,054	30·57	32
1,478	12,578	.....	+ 480	48·10	+ 4,524	56·17	33
53,870	187,064	0·17	− 10,774	16·67	− 35,748	16·04	34
88,205	91,951	.....	+ 31,281	54·95	+ 20,666	28·99	35
84,092	409,624	0·38	+ 55	0·06	− 5,595	1·35	36
7,112	22,308	.....	+ 2,762	63·49	+ 12,008	117·00	37
22	134	.....	+ 22	.....	+ 134	.....	38
.....	37,757,158	35·34	.....	.....	+ 6,615,907	21·24	

(*e*) Nickel content of matte produced valued at 36 cents per pound in 1909; and at 30 cents in 1910. (Increasing quantities of nickel-copper matte are now being used in making monel metal which is sold at a price much below that of refined nickel.) The value of the nickel contained in matte, as returned by the operators, was about 10 cents per pound for both years.

(*f*) Estimated recoverable silver at 51·503 cents per ounce in 1909; and at 53·486 cents in 1910.

(*g*) Gross returns for sale of gas.

(*h*) Quantity on which bounty was paid and valued at $1.33 per barrel in 1909 and at $1.23 in 1910.

(*i*) Value received by shippers of silver cobalt ores for cobalt content.

Comparative Statement of Mineral

No.	Product.	1909.		
		Quantity.	Value.	Per cent of total.
	Structural Materials and Clay Products.		$	%
39	Cement, Portland ..... Bls.	4,067,709	5,345,802	5·82
	Clay products—			
40	Brick, common ..... No.	539,228,708	4,212,424	4·58
41	Brick, pressed ..... "	57,264,656	630,677	0·68
42	Brick, paving ..... "	3,759,803	67,408	.....
43	Brick, moulded and ornamental	.....	8,866	.....
44	Fireclay, and fireclay products	.....	78,132	.....
45	Fireproofing and architectural terra-cotta	.....	113,886	0·12
46	Pottery	.....	285,285	0·31
47	Sewer-pipe	.....	645,722	0·70
48	Tile, drain ..... No.	27,571,097	408,440	0·44
49	Lime ..... Bus.	5,592,924	1,132,756	1·23
50	Sand-lime brick ..... No.	27,052,864	201,650	0·21
51	Sand and gravel (exports) ..... Tons.	481,584	256,166	0·27
52	Slate ..... Squares.	4,000	19,000	.....
	Stone—			
53	Granite	.....	454,824	0·49
54	Limestone	.....	2,139,691	2·33
55	Marble	.....	158,441	0·17
56	Sandstone	.....	374,179	0·40
	Total	.....	16,533,349	18·00
	Grand total	.....	91,831,441	100·00

Production for Years 1909 and 1910—*Continued.*

1910.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).		No.
Quantity.	Value. (*a*)	Per cent of total.	Quantity.	%	Value.	%	
	$	%			$		
4,753,975	6,412,215	6·00	+ 686,266	16·87	+ 1,066,413	19·95	39
627,715,319	5,105,354	4·77	+ 88,486,611	16·41	+ 892,930	21·19	40
67,895,034	807,294	0·75	+ 10,630,378	18·56	+ 176,617	28·00	41
4,214,917	78,980	.....	+ 457,114	12·16	+ 11,572	17·17	42
703,345	16,092	.....	.....	.....	+ 7,226	81·50	43
.....	50,215	.....	.....	.....	− 27,917	35·73	44
.....	176,979	0·16	.....	.....	+ 63,093	55·40	45
.....	250,924	0·23	.....	.....	− 34,361	12·04	46
.....	774,110	0·72	.....	.....	+ 128,388	19·88	47
24,562,648	370,008	0·34	− 3,008,449	10·91	− 38,432	9·41	48
5,848,146	1,137,079	1·06	+ 255,222	4·56	+ 4,323	0·38	49
44,593,541	371,857	0·34	+ 17,540,677	64·84	+ 170,207	84·41	50
624,824	407,974	0·38	+ 143,240	29·74	+ 151,808	59·26	51
3,959	18,492	.....	− 41	1·03	− 508	2·67	52
.....	739,516	0·69	.....	.....	+ 284,692	62·59	53
.....	2,249,576	2·10	.....	.....	+ 109,885	5·14	54
.....	158,779	0·14	.....	.....	+ 338	0·21	55
.....	502,148	0·47	.....	.....	+ 127,969	34·20	56
.....	19,627,592	18·37	.....	.....	+ 3,094,243	18·72	
.....	106,823,623	100·00	.....	.....	+ 14,992,182	16·33	

The production of metalliferous products in 1910 was valued at $49,438,873, being 46 per cent of the total mineral output; and an increase in value over the previous year of $5,282,032, or nearly 12 per cent. The value of non-metalliferous products (excluding structural material and clays) in 1910 was $37,757,158, being 35 per cent of the total mineral output; and an increase of $6,615,907, or 21 per cent, in value over 1909. The value of the production of clay, lime and stone, and other structural materials in 1910 was $19,627,592, or 18 per cent of the total production; and an increase of $3,094,243 over the 1909 output.

Amongst the more important minerals mined, coal occupied first place, contributing about 29 per cent of the total production; silver, next in importance, contributed over 16 per cent of the total; nickel was next in order with over 10 per cent; while gold occupied fourth place with 9½ per cent of the total; clay products contributed 7 per cent; copper 6·6 per cent; cement 6 per cent.

The increased production was not confined to a few products, but was, on the other hand, fairly well distributed throughout the list of ores and minerals mined in Canada. Amongst the metallic products the principal increases were in silver, nickel, gold, and copper; there being a falling off in the production of lead and of zinc. There was an increased production of pig iron from blast furnaces, but a smaller amount credited to Canadian iron ore.

The prices of metals upon which the value of the production directly depends did not vary greatly during the year, nor did the averages differ much from those of the previous year. Lead, silver, and zinc averaged higher in price in 1910, while copper was fractionally lower and nickel remained practically at the same price level.

—	1906.	1907.	1908.	1909.	1910.
	Cts.	Cts.	Cts.	Cts.	Cts.
Copper, New York	19·278	20·604	13·208	12·982	12·738
Lead "	5·657	5·325	4·200	4·273	4·446
" Toronto	4·727	5·429	3·894	3·692	3·687
Nickel, New York	41·64	45·000	43·000	40·000	40·000
Silver "	66·791	65·327	52·864	51·503	53·486
Spelter "	6·198	5·962	4·720	5·503	5·520
Tin "	39·819	38·166	29·465	29·725	34·123

Quotations from *Hardware and Metal* and *Engineering and Mining Journal.*

Among the non-metallic products the principal increases were in coal, asbestos, natural gas, and gypsum; while the falling off in production of crude petroleum was quite marked. The structural materials and clay products nearly all showed substantial increases.

EXPORTS AND IMPORTS.

A very large portion of the mineral production of Canada is exported for refining and manufacturing in the United States and other countries; while considerable quantities of mine products which have been refined or subjected

to partial treatment, or in the form of manufactured goods ready for consumption, are imported.

The total value of the exports of products of the mine, including direct mine products and manufactures, in 1910 was $51,856,862; as compared with $47,442,001 in 1909. This value includes for 1910 mine products to the value of $42,236,270 and manufactures valued at $9,620,592. About 93 per cent of the value of the mine products exported is made up by silver, nickel, copper, gold, coal, and asbestos. Manufactured mine products consist chiefly of iron and steel goods; coke; and aluminium, made from imported ore.

The United States is the chief destination of Canada's mine exports, about 83 per cent having been exported to that country during the fiscal year 1909-1910, and about 9 per cent to Great Britain.

The imports of minerals and mineral products during the fiscal year 1909-1910 were valued at $112,920,852. Of this amount about 46 per cent is made up of iron and steel goods; 26 per cent coal and coke; while the metals copper, silver, gold, platinum, lead, zinc, tin and manufactures thereof, and metallic alloys, make up a total value of $12,528,746 or 11 per cent of the total, the balance being distributed among a great variety of mineral products.

The great excess of imports over exports of mineral products would appear to show that there is considerable opportunity in the development of our mineral resources to supply the demands of the home market. Also the large export of crude unrefined metal products and the corresponding imports of refined and manufactured metal products would seem to indicate opportunities for the further development of metallurgical industries as well as the treatment, refinement, and manufacture of non-metallic products.

Exports of the Products of the Mine and of Manufactures of Mine Products—Calendar Years 1909 and 1910.

		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Arsenic	Lbs.	3,111,249	119,673	4,512,673	173,932
Asbestos	Tons.	56,971	1,729,857	71,485	2,108,632
Barytes	Cwt.			5	150
Chromite	Tons	1,794	20,858	15	150
Coal	"	1,588,099	4,456,342	2,377,049	6,077,350
Feldspar	"	10,834	35,234	15,601	47,962
Gold			5,629,549		5,491,051
Gypsum	Tons	315,201	372,286	346,081	416,725
Copper, fine, in ore, etc	Lbs.	54,447,750	5,832,246	56,964,127	5,840,553
Lead, in ore, etc	"	6,226,068	132,578	46,800	1,308
" in pig	"	11,301,960	361,064	7,712,253	248,174
Nickel, in ore, etc	"	25,616,398	2,676,483	36,014,782	4,039,040
Platinum in ore, concentrates	Ozs.	466	2,118	2,254	62,776
Silver in ore, etc	"	31,126,504	15,719,909	30,699,770	15,649,537
Mica	Lbs.	717,066	256,834	937,263	330,903
Carried forward			37,345,031		40,488,243

Exports of the Products of the Mine and of Manufactures of Mine Products—Calender Years 1909 and 1910—*Continued.*

—		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Brought forward		.....	37,345,031	.....	40,488,243
Mineral pigments	"	1,316,514	7,956	3,491,737	29,839
Mineral water	Gals.	60,562	7,433	16,136	7,169
Oil, refined	"	7,768	934	2,818	462
Ores—					
Antimony	Tons.	4	120	239	14,095
Iron	"	21,956	61,954	114,499	324,186
Manganese	"	3	434	4	160
Other ores	"	11,939	625,142	9,534	641,426
Phosphate	"	895	15,735	.....	.....
Plumbago	Cwt.	20,070	52,438	15,768	53,008
Pyrites	Tons	35,798	156,644	30,434	110,071
Salt	Lbs.	276,765	2,488	275,200	2,618
Sand and gravel	Tons.	481,584	256,166	624,824	407,974
Slate	"	134	612	.....	.....
Stone, ornamental	"	1,027	8,606	446	3,352
" building	"	26,672	15,481	63,407	18,867
" for mfg. of grindstones	"	125	1,685	308	338
Other products of the mine		.....	109,350	.....	134,462
Total, mine products		.....	38,668,209	.....	42,236,270
Manufactures—					
Agricultural implements—					
Mowing machines	No.	20,114	700,593	18,745	634,326
Reapers	"	4,504	270,452	3,411	220,517
Harvesters	"	12,316	1,239,597	11,382	1,234,794
Ploughs	"	11,924	301,878	16,888	540,677
Harrows	"	4,875	76,194	8,924	115,068
Hay forks	"	1	48	.....	.....
Hay rakes	"	5,881	159,767	6,344	205,342
Seeders	"	159	11,983	256	13,727
Threshing machines	"	.....	.....	29	8,576
All other		.....	1,010,776	.....	1,163,722
Parts of		.....	455,002	.....	575,848
Brick	M.	365	2,255	390	2,762
Aluminium in bars, etc	Lbs.	6,134,500	918,195	77,224	1,160,242
" manufactured		.....	3,453	.....	3,741
Cement		.....	113,362	.....	12,914
Clay, manufactures of		.....	979	.....	9,061
Coke	Tons.	74,067	329,051	57,971	250,715
Grindstones, manufactured		.....	13,942	.....	23,164
Gypsum, ground		.....	2,787	.....	12,306
Iron and steel—					
Stoves	No.	744	10,330	1,058	15,832
Castings, N.E.S.		.....	25,038	.....	51,958
Pig iron	Tons.	5,063	186,778	9,763	296,310
Machinery (Linotype)		.....	43,686	.....	39,438
" N.E.S.		.....	421,707	.....	301,961
Sewing machines	No.	12,759	147,402	17,834	188,196
Typewriters	"	3,749	238,167	5,970	409,326
Hardware, tools, etc		.....	52,207	.....	88,844
" N.E.S.		.....	35,507	.....	43,472
Scrap iron and steel	Cwt.	410,506	305,256	233,264	171,603
Steel and manufactures of		.....	1,132,678	.....	1,110,925
Lime		.....	48,821	.....	44,762
Metals, N.O.P.		.....	134,062	.....	133,426
Plumbago, manufactures of		.....	864	.....	66,658
Stone, ornamental		.....	33,097	.....	5,272
" building		.....	501	.....	80
Vehicles—					
Automobiles	No.	213	279,924	387	433,663
Bicycles	"	84	2,703	72	2,710
" parts of		.....	64,750	.....	28,654
Total, manufactured products		.....	8,773,792	.....	9,620,592
Grand Total		.....	47,442,001	.....	51,856,862

EXPORTS.

Showing Destination of Mine Products during the Fiscal Years 1908-9 and 1909-10.

Destination.	1908-9. — Value.	1909-10. — Value.
	$	$
United States	31,260,862	33,488,464
Great Britain	2,986,967	3,820,574
China	595,683	777,147
Newfoundland	501,559	528,031
Mexico	170,797	325,153
Hong Kong	602,347	216,514
Australia	179,276	212,950
Japan	180,679	202,071
Belgium	209,640	177,675
France	67,921	110,222
Bermuda	41,426	53,071
Germany	337,316	43,975
St. Pierre	27,508	28,450
Holland	.....	17,218
Cuba	11,428	14,946
West Indies	31,838	13,552
Italy	2,773	10,956
British Possessions (all other)	4,779	10,903
New Zealand	19,441	8,518
Venezuela	.....	6,383
Peru	12,328	5,187
Chili	.....	4,950
Argentina	1,735	4,516
Cape Verde Islands	.....	3,675
Austria-Hungary	.....	1,030
Denmark	.....	650
British Africa	310	97
Switzerland	.....	73
Central American States	.....	66
Dutch East Indies	6,993	.....
Bolivia	4,016	.....
British Guiana	77	.....
Totals	37,257,699	40,087,017

IMPORTS.

Minerals and Mineral Products, Fiscal Year 1909-10.

Products.	Value.
	$
Alumina	322,566
Alum and alum cake	94,398
Aluminium	471,924
Antimony	34,728
Antimony salts	5,953
Arsenic	11,485
Asbestos	198,710
Asphaltum	396,627
Bells and gongs	95,422
Bismuth	9,029
Blanc fixe and satin white	14,735
Blast furnace slag	67,818
Borax	84,039
Brick and tile	821,856
Brick, fire	519,454
Burrstones	1,973
Cement	166,718
Chalk, etc	140,275
Clays	218,232
Coal	27,526,678
Coal tar and coal pitch	68,232
Coke	1,695,603
Copper and manufactures of	3,488,260
Cryolite	28,409
Crucibles, clay or plumbago	43,029
Chloride of lime	110,145
Earthenware	1,859,302
Electric carbons	205,025
Emery	102,019
Flint, quartz, etc	39,568
Fullers earth	5,611
Fossils	610
Gold and silver manufactures of	1,578,441
Graphite and manufactures of	56,968
Gypsum and plaster of Paris	153,504
Iron and steel—	
Pig iron	2,127,135
Ferro-silicon, etc	332,486
All other iron and steel	49,390,637
Kainite	7,254
Lead and manufactures of	463,905
Lime	116,964
Litharge	62,174
Lithographic stone	7,329
Manganese, oxide of	13,048
Magnesia	5,685
Marble and manufactures of	184,798
Mercury	146,914
Metallic alloys—	
Babbitt metal	30,349
Brass and manufactures of	2,027,826
Britannia metal	40,537
German silver, nickel, and nickel silver	154,964
Type metal	522
Mineral and bituminous substances	58,803
Mineral and metallic pigments	1,099,065
Mineral water, including aerated water	188,559
Nickel anodes	23,266
Ores of metals, N.O.P.	3,345,550
Paraffin wax	27,296
Paraffin candles	20,842
Petroleum and products of	3,249,844
Phosphate (fertilizer)	47,447
Platinum and manufactures of	84,435

IMPORTS.

Minerals and Mineral Products, Fiscal Year 1909-10—*Continued.*

Products.	Value.
	$
Precious stones	2,220,881
Pumice	12,047
Salt	465,253
Saltpetre	67,054
Sand and gravel	155,012
Slate and manufactures of	136,401
Stone and manufactures of	656,960
Sulphate of copper	78,177
Sulphate of iron	5,182
Sulphur and phosphorus	434,528
Sulphuric acid	8,466
Tin and manufactures of	3,826,390
Whiting	76,404
Zinc and manufactures of	883,117
Total	112,920,852

METALLIC ORES AND PRODUCTS.

Antimony.—Shipments of antimony ore in 1910 were reported as 364 tons valued at $13,906, as compared with 35 tons valued at $1,575 in 1909. There was no production of refined antimony in 1910, while 61,207 pounds valued at $4,285 were produced in 1909. The exports of antimony ore during 1910 were 239 tons valued at $14,095. The imports of antimony or regulus thereof in 1910 were 388,952 pounds valued at $25,296, and of antimony salts 94,330 pounds valued at $9,152; or a total value of imports of $34,448.

Cobalt.—Cobalt was recovered in the form of cobalt-oxide at two smelters in Ontario, but statistics of production are not available for publication. The mine owners reported the receipt of $51,986 on account of cobalt content of ore shipped in 1910, as compared with $94,609 recovered on the same account in 1909. Imports of cobalt-oxide are included with other metallic pigments and not separately stated.

Copper.—The production of copper contained in blister, matte, or ore which was practically all exported, was 55,692,369 pounds in 1910, as compared with 52,493,863 pounds in 1909; an increase of 3,198,506 pounds or 6 per cent.

The exports in 1910 were reported as 56,964,127 pounds valued at $5,840,553, as against exports of 54,447,750 pounds valued at $5,832,246 in 1909. The total imports of copper in 1910 were valued at $4,369,773; and included crude and manufactured copper to the extent of 30,237,106 pounds valued at $4,219,451, together with other copper manufactures valued at $150,322 of which the quantity was not stated.

Gold.—The total value of the production of gold in 1910 was $10,205,835: representing 493,707 fine ounces of metal, and showing an increase of $823,605

or nearly 9 per cent over the production of 1909, which was valued at $9,382,230 representing 453,865 fine ounces.

The Yukon placer production in 1910 was $4,550,000, as against $3,960,000 in 1909.

Of the total production in 1910 about $5,091,850 are to be attributed to alluvial workings; $680,349 derived from stamp milling; and $4,433,628 obtained from ores and concentrates sent to smelters. In 1909, $4,437,525 were credited to alluvial workings, $572,619 derived from stamp milling and cyaniding, and $4,371,914 obtained from ores and concentrates sent to smelters.

The exports of gold bearing dust quartz nuggets and gold in ore, etc., in 1910, were valued at $5,491,051, as against $5,629,549 in 1909.

The imports of gold coin during the fiscal year 1910 were $4,998,236, and of gold bullion $516,581.

Pig Iron.—The total production of pig iron in Canadian blast furnaces in 1910 was 800,797 tons valued at $11,245,622, of which, for the purpose of bounty payment, 104,906 tons valued at $1,650,849 were credited to Canadian ore and the balance to imported ore, mill cinder, etc. In 1909 the total production was 757,162 tons valued at $9,581,864, of which 149,444 tons valued at $2,222,215 were credited to Canadian ore.

The exports of pig iron, including ferro-products in 1910, were 9,763 tons valued at $296,310, as against 5,063 tons valued at $186,778 in 1909. The imports of pig iron in 1910 were 227,753 tons valued at $3,122,695; charcoal pig iron 16,106 tons valued at $242,152; and ferro-manganese, etc., 18,900 tons valued at $464,741; as compared with imports in 1909 of: pig iron 147,925 tons valued at $1,798,192; charcoal pig iron 413 tons valued at $5,727; and ferro-manganese, etc., 17,699 tons valued at $411,536.

The total exports of iron and steel and manufactures thereof in 1910 were valued at $7,895,489; as against $7,172,413 in 1909. The imports of iron and steel and manufactures during the fiscal year 1910 were valued at $59,952,197, as compared with $40,393,431 during the fiscal year 1909.

Iron Ore.—The total shipments of iron ore from Canadian mines in 1910 were 259,418 tons valued at $574,362, as compared with 268,043 tons valued at $659,316 in 1909. The exports of iron ore in 1910 were 114,449 tons valued at $324,186, as against 21,965 tons valued at $61,954 exported in 1909. The quantity of imported iron ore used in Canada in 1910 was about 1,377,035 tons, as compared with 1,235,000 tons of imported ore used in 1909.

Lead.—The production of lead in 1910 was 32,987,508 pounds valued at $1,216,249, as against 45,857,424 pounds valued at $1,692,139 in 1909; a decreased production of 12,869,916 pounds. The exports of lead in 1910 were: lead in ore, etc., 46,800 pounds; pig lead, 7,712,253 pounds—total 7,759,053 pounds; while in 1909 the exports were: lead in ore, etc., 6,226,068 pounds; pig lead, 11,301,960 pounds—total 17,528,028 pounds. The total value of the imports of lead and

manufactures of, in 1910, was $689,002, as compared with imports in 1909 valued at $510,949.

Nickel.—The production of nickel contained in nickel-copper matte produced in Canada and exported for refinement was, in 1910, 37,271,033 pounds, as compared with a production of 26,282,991 pounds in 1909; the increase in production being, therefore, 10,988,042 pounds or nearly 42 per cent. During 1910 there were smelted 628,947 tons of ore producing 35,033 tons of matte, as against 462,336 tons of ore smelted in 1909, producing 25,848 tons of matte. Small quantities of nickel oxide are also produced in connexion with the treatment of the Cobalt District silver ores, but statistics of production are not available for publication. The exports of nickel contained in ore, matte, etc., during 1910, were 36,014,782 pounds valued at $4,039,040: being 5,335,331 pounds to Great Britain and 30,679,451 pounds to the United States. In 1909 the exports were 25,616,398 pounds valued at $2,676,483: being 3,843,763 pounds to Great Britain and 21,772,635 pounds to the United States. The imports of nickel and nickel anodes in 1910 were valued at $23,317.

Silver.—The production of silver contained in bullion, or estimated as recovered from mattes and ore, etc., exported was, in 1910, 32,869,264 fine ounces valued at $17,580,455, as compared with a production of 27,529,473 fine ounces valued at $14,178,504 in 1909; an increase of 5,339,791 ounces or over 19 per cent. About 92·4 per cent of the production in 1910 was derived from "Cobalt district" of Ontario. The production of silver in 1905 was only 6,000,023 ounces and in 1900, 4,468,225 ounces. The exports of silver contained in ores, mattes, etc., in 1910, were 30,699,770 ounces valued at $15,649,537; as against exports of 31,126,504 ounces valued at $15,719,909 in 1909. The imports of silver bullion during the fiscal year 1910 were valued at $502,772, as compared with bullion imports of $376,681 in 1909.

Zinc.—The shipments of zinc ore in 1910 were 5,063 tons valued at $120,003, as compared with shipments of 18,371 tons valued at $242,699 in 1909. The total value of the imports of zinc and manufactures of zinc, in 1910, was $1,086,729, as compared with imports valued at $1,040,770 in 1909.

NON-METALLIC PRODUCTS.

Actinolite.—A production of 30 tons valued at $330 was reported in 1910; no returns of production being received for 1909.

Arsenic.—Returns from three smelters in which arsenic is recovered give a production in 1910 of 1,502 tons valued at $75,328, as compared with 1,129 tons valued at $64,100 in 1909. There were also 547 tons of arsenical ore shipped in 1910, valued at $5,716, as compared with 224 tons valued at $3,346 in 1909.

The exports of arsenic in 1910 were 2,256 tons valued at $173,932, and in 1909, 1,556 tons valued at $119,673. The imports of arsenious oxide, in 1910, were 260,415 pounds valued at $6,891, and of sulphate of arsenic 257,451 pounds valued at $8,946.

Asbestos.—The shipments of asbestos in 1910 were 77,508 tons valued at $2,555,974, and of asbestic 24,707 tons valued at $17,629. The shipments in 1909 were 63,349 tons of asbestos valued at $2,284,587, and 23,951 tons of asbestic valued at $17,188. The shipments in 1910 consisted of 3,740 tons of crude asbestos valued at $664,508, and 73,768 tons of mill stock valued at $1,891,466. Considerable quantities both of crude and of mill stock were held in manufacturers hands at the close of the year.

Exports in 1910 were 71,485 tons valued at $2,108,632, as against 56,971 tons valued at $1,729,857 in 1909.

Imports and manufactures of asbestos in 1910 were valued at $230,489, and in 1909, $196,742.

Chromite.—Shipments of chromite in 1910 were reported as 299 tons valued at $3,734, as compared with shipments of 2,470 tons valued at $26,604 in 1909.

Coal.—The production of coal in 1910 was 12,909,152 tons valued at $30,909,779, as against 10,501,475 tons valued at $24,781,236 in 1909; showing an increased production of 2,407,677 tons or nearly 23 per cent. The exports of coal in 1910 were 2,377,049 tons valued at $6,077,350, as compared with 1,588,099 tons valued at $4,456,342 exported in 1909. The total imports of coal in 1910 were 10,597,982 tons valued at $28,450,001, as against imports in 1909 of 9,872,924 tons valued at $26,831,859.

The 1910 imports included 5,966,466 tons of bituminous round and run of mine coal, valued at $11,919,341; 3,266,235 tons of anthracite and anthracite dust, valued at $14,735,062; and 1,365,281 tons of bituminous slack such as will pass through a ¾″ screen valued at $1,795,598.

In 1909 the imports included 5,625,063 tons of bituminous round and run of mine valued at $11,455,818; 3,017,844 tons of anthracite and anthracite dust valued at $13,906,152; and 1,230,017 tons of bituminous slack valued at $1,469,889. The consumption of coal in 1910 was approximately 20,970,226 tons, as against 18,625,202 tons in 1909.

Coke.—The total quantity of oven coke made in 1910 was 901,269 tons, the quantity sold or used was 902,715 tons, valued at $3,462,872; as compared with 871,727 tons made and 862,011 tons sold or used, valued at $3,484,393, in 1909. The quantity of coal charged to coke ovens in 1910 was 1,373,793 tons, as against 1,327,150 tons in 1909. The exports of coke in 1910 were 57,971 tons valued at $250,715, and in 1909, 74,067 tons valued at $329,051. The imports of coke in 1910 were 737,088 tons valued at $1,908,725, as compared with imports of 661,425 tons valued at $1,508,627 in 1909.

Corundum.—The total sales of grain corundum in 1910 were 1,870 tons valued at $198,680, as compared with sales in 1909 of 1,491 tons valued at $162,492.

Feldspar.—Shipment increased from 12,783 tons valued at $40,383 in 1909, to 15,809 tons valued at $47,667 in 1910. The exports are recorded as 10,834 tons valued at $35,234 in 1909, and 15,601 tons valued at $47,962 in 1910.

Fluorspar.—A small production of fluorspar was reported in 1910, of which 2 tons valued at $15 were shipped from the mine. About 7,461 tons of fluorspar were used during the year in steel plants.

Graphite.—Shipments of crude and milled graphite during 1910 totalled 1,392 tons valued at $74,087, as against 864 tons valued at $47,800 shipped in 1909. The production of artificial graphite in 1910 was reported as 1,221 tons, as compared with 257 tons in 1909.

Exports of plumbago in 1910 are reported as 788 tons valued at $53,008, and manufactures of plumbago valued at $66,658. Exports in 1909 were: plumbago, 1,004 tons valued at $52,440, and manufactures of plumbago valued at $864. Imports of graphite in 1910 were valued at $112,853 and included: plumbago not ground, $4,867; blacklead, $10,048; plumbago ground and manufactures of, $45,042; and crucibles of clay or plumbago, $52,896. In 1909 the imports were valued at $94,392, including: plumbago not ground, $5,075; blacklead, $11,638; plumbago ground and manufactures of, $37,538; and crucibles of clay or plumbago, $40,141.

Grindstones.—The production of grindstones, scythestones, and wood pulpstones in 1910 was 3,973 tons valued at $47,196, as compared with 4,275 tons valued at $54,664 in 1909. The exports in 1910 included: stone for the manufacture of grindstones, 308 tons valued at $338; and manufactured grindstones valued at $23,164; the exports in 1909 were: stone for the manufacture of grindstones, 125 tons valued at $1,685, and manufactured grindstones valued at $13,942. The imports of abrasives in 1910 included: grindstones valued at $71,394; burrstones, $854; emery in bulk crushed or ground, $40,400; manufactures of emery, carborundum, etc., $92,890; pumice stone, $14,829. The 1909 imports comprised: grindstones valued at $69,554; burrstones, $2,001; emery in bulk crushed or ground, $29,752; manufactures of, $66,777, and pumice stone, $11,291.

Gypsum.—The total shipments of gypsum crude and calcined in 1910 were 525,246 tons valued at $934,446, as compared with shipments of 473,129 tons valued at $809,632 in 1909. The tonnage of gypsum mined or quarried in 1910 was 548,019 tons, and the quantity calcined, 69,889 tons. In 1909, 493,086 tons of gypsum were mined and 63,670 tons calcined. The shipments in 1910 included: crude gypsum, 469,573 tons valued at $508,686; ground gypsum, 6,121 tons valued at $17,390, and calcined gypsum 49,552 tons valued at $408,370. In 1909 shipments comprised: crude gypsum, 423,474 tons valued at $457,038; ground gypsum, 8,814 tons valued at $26,159, and calcined gypsum, 40,841 tons valued at $326,435. The exports of gypsum in 1910 were: 346,081 tons of crude gypsum valued at $416,725, and gypsum ground or calcined valued at $12,306. The 1909 exports were: 315,201 tons of crude gypsum valued at $372,286, and gypsum ground or calcined valued at $2,787.

The imports of gypsum in 1910 were valued at $169,798, including: crude gypsum, 12,271 tons valued at $21,073; ground gypsum, 6,690 tons valued at

$13,242, and plaster of Paris, 19,045 tons valued at $135,483. The total value of imports in 1909 was $141,715, made up of: crude gypsum, 3,958 tons, valued at $12,507; ground gypsum, 10,737 tons valued at $16,779, and plaster of Paris, 19,116 tons valued at $112,429.

Magnesite.—Shipments of magnesite in 1910 were 323 tons valued at $2,160, and in 1909, 330 tons valued at $2,508.

Mica.—The value of the mica production in 1910 as reported by mine operators was $190,385, as compared with $147,782 in 1909. The exports of mica in 1910 were 937,263 pounds valued at $330,903, as against 717,066 pounds valued at $256,834 in 1909.

Mineral Pigments.—Shipments of barytes in 1909 were 179 tons valued at $1,120, and no production was reported in 1910. The production of iron ochres in 1910 was 4,813 tons valued at $33,185, as compared with 3,940 tons valued at $28,093 in 1909.

The exports of iron oxides in 1910 were 1,746 tons valued at $29,839, as against 658 tons valued at $7,956 in 1909. The imports in 1910 were: ochres and ochrey earth and raw siennas, 1,246 tons valued at $31,926; and oxides, dry fillers, fireproof umbers, and burnt siennas, 868 tons valued at $23,467. The total imports in 1909 were valued at $39,497.

Mineral Water.—The value of the production of mineral water in 1910 for which returns were received was $199,563, as compared with a value of $175,173 in 1909. The imports of mineral and aerated waters in 1910 were valued at $202,306, as against a value of $184,071 in 1909.

Natural Gas.—The value of the production of natural gas in 1910 was $1,346,471, as compared with a value of $1,207,029 in 1909 and $1,012,660 in 1908.

Peat.—Shipments of peat for fuel purposes in 1910 were 841 tons valued at $2,604, as compared with 60 tons valued at $240 in 1909.

Petroleum.—The production of crude petroleum shows another large falling off in 1910, the production being only 315,895 barrels or 11,056,337 gallons valued at $388,550; as compared with 420,755 barrels or 14,726,433 gallons valued at $559,604 in 1909.

Exports of refined oil in 1910 were 2,818 gallons valued at $462, and 7,768 gallons valued at $934 in 1909.

While the production has been decreasing the imports have been increasing; the total output of petroleum oils, crude and refined, in 1910 was 84,629,334 gallons valued at $4,826,763, in addition to 1,362,235 pounds of wax and candles valued at $80,106. The oil imports included: crude oil, 53,604,053 gallons valued at $1,639,358; refined and illuminating oils, 7,656,727 gallons valued at $502,364; gasoline, 16,679,691 gallons valued at $1,693,296; lubricating oils, 4,081,257 gal-

lons valued at $718,381, and other petroleum products, 2,607,606 gallons valued at $273,364.

The total imports in 1909 were 58,317,101 gallons, valued at $3,353,311, in addition to 467,731 pounds of wax and candles valued at $40,689. The oil imports in 1909 included: crude oil, 35,884,103 gallons, valued at $1,186,400; refined and illuminating oils, 9,632,595 gallons, valued at $705,971; gasoline, 7,452,762 gallons, valued at $706,994; lubricating oils, 3,909,117 gallons, valued at $558,632, and other petroleum products, 2,038,524 gallons valued at $195,314.

Phosphate.—Shipments of phosphate or apatite in 1910 were 1,478 tons valued at $12,578, as compared with 998 tons valued at $8,054 in 1909. There were no exports reported in 1910, as against 895 tons valued at $15,735 in 1909. The imports of phosphate rock (fertilizer) in 1910 were valued at $72,950; phosphorus, 6,752 pounds valued at $2,065, and manufactured fertilizers valued at $388,467.

Pyrites.—The production of pyrites in 1910 was 53,870 tons valued at $187,064, as compared with 64,644 tons valued at $222,812 in 1909. The exports of pyrites in 1910 were 30,434 tons valued at $110,071, as against exports of 35,798 tons valued at $156,644 in 1909. The imports of brimstone or sulphur in 1910 were 22,835 tons valued at $474,619, as against 22,887 tons valued at $458,961 in 1909.

Quartz.—The production of quartz in 1910 was reported as 88,205 tons valued at $91,951, compared with a production in 1909 of 56,924 tons valued at $71,285. There were imported during 1910, 628 tons of silex or crystallized quartz, valued at $11,996, and, in 1909, 559 tons valued at $8,733.

Salt.—The total sales of salt in 1910 were 84,092 tons valued at $409,624 (exclusive of packages). The value of the packages used was $173,446. In 1909 the sales were 84,037 tons valued at $415,219, and value of packages used, $175,612.

Exports of salt in 1910 were 275,200 pounds, valued at $2,618, and, in 1909, 276,765 pounds valued at $2,488. The total imports of salt in 1910 were valued at $462,061, and included: 20,174 tons valued at $97,326, subject to duty; and 108,794 tons valued at $364,735, duty free. The 1909 imports were valued at $431,221 and comprised: 112,554 tons of salt subject to duty, valued at $352,165; and 16,857 tons duty free, valued at $79,056.

The imports of soda products in 1910 included: soda ash or barilla 35,596,006 pounds, valued at $306,167; soda bichromate 878,777 pounds, valued at $32,842; caustic soda in packages of 25 pounds or more 13,848,170 pounds, valued at $260,938; sal soda 9,715,272 pounds, valued at $72,845, and sulphate of soda 17,728,543 pounds, valued at $95,054.

Talc.—The production of talc increased from 4,350 tons, valued at $10,300, in 1909, to 7,112 tons, valued at $22,308, in 1910.

Tripolite.—There was a production of 22 tons, valued at $134, reported for 1910 and no production in 1909.

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

Cement.—The total sales of cement in 1910 were 4,753,975 barrels, valued at $6,412,215, as against 4,067,709 barrels, valued at $5,345,802, sold in 1909, showing an increase of 686,266 barrels. The exports of cement in 1910 were valued at $12,914, compared with exports valued at $113,362 in 1909.

The imports of cement in 1910 included: manufactures of cement, valued at $7,718; hydraulic cement, 365 hundredweight, valued at $349; and Portland cement, 1,222,586 hundredweight (349,310 barrels) valued at $468,046. The imports in 1909 were: manufactures of cement, valued at $6,374; hydraulic cement, 682 hundredweight, valued at $614; and Portland cement, 497,678 hundredweight (142,194 barrels) valued at $166,669.

The consumption of Portland cement in Canada in 1910 was approximately 5,103,285 barrels, as compared with 4,209,903 barrels in 1909.

Clay Products.—The total value of the production of clay products in Canada in 1910 was $7,629,956, as compared with a total value of $6,450,840 in 1909. Brick and tile products alone were valued in 1910 at $6,377,728, as against $5,327,815 in 1909. The value of sewerpipe production in 1910 was $774,110, as compared with $645,722 in 1909. The only clay products exported in 1910 were: 390,000 building brick, valued at $2,762, and manufactures of clay valued at $9,061; against 365,000, valued at $2,255, in 1909, and manufactures valued at $979. The total imports of clay products in 1910 were valued at $4,331,397, and included: brick and tile valued at $1,755,773; earthenware and chinaware, $2,283,116, and clays valued at $292,508. The total imports in 1909 were valued at $3,247,539, comprising: brick and tile, $1,249,450; earthenware and chinaware, $1,781,759, and clays, $216,330.

Lime.—The total production of lime in 1910 was 5,848,146 bushels, valued at $1,137,079, as compared with 5,592,924 bushels, valued at $1,132,756, in 1909. The exports of lime in 1910 were valued at $44,762, as against exports valued at $48,821 in 1909. The imports of lime in 1910 were 212,502 barrels, valued at $138,847, and in 1909, 168,357 barrels, valued at $118,239.

Sand-Lime Brick.—The total sales of sand-lime brick in 1910 by 13 firms reporting were 44,593,541, valued at $371,857, an average value of $8.34 per thousand. The sales in 1909 by 9 firms reporting were 27,052,864 brick valued at $201,650, an average of $7.45 per thousand.

Slate.—The production of slate in 1910 was 3,959 squares valued at $18,492, and 4,000 squares, valued at $19,000, in 1909.

The imports of slate in 1910 were valued at $142,285, and included: roofing slate, valued at $67,063; school writing slate, $31,397; slate pencils, $6,948, and manufactures of slate, $36,877.

The imports in 1909 were valued at $135,221, comprising: roofing slate, $71,914; school writing slate, $34,085; slate pencils, $6,154, and manufactures of slate, $23,068.

Stone.—The total value of the production of stone of all kinds, in 1910, was $3,650,019, as compared with a value of $3,127,135 in 1909. The value of stone exports in 1910 was $27,471, as against $59,370 in 1909; and the total value of stone imported in 1910 was $845,123, as against imports valued at $683,801 in 1909.

The production in 1910 included: granite valued at $739,516; limestone, $2,249,576; marble, $158,779, and sandstone, $502,148. In 1909 the production of granite was valued at $454,824; limestone, $2,139,691; marble, $158,441, and sandstone, $374,179.

Classifying the output according to the purposes for which the stone was used, the production in 1910 comprised: building stone, valued at $1,504,001; ornamental and monumental stone, $147,421; paving and curbstone, $239,668; rubble, $352,000; crushed stone, $975,379; and furnace flux, $431,550; while in 1909 the production included: building stone, valued at $1,170,550; ornamental and monumental stone, $306,338; paving and curbstone, $279,227; rubble, $303,120; crushed stone, $664,287, and furnace flux, $403,613.

PRODUCTION BY PROVINCES.

A summary of the mineral production by provinces in 1909 and 1910 is shown in the accompanying tables, in the first of which the total production in the several provinces, and the percentage of each, is given for the past three years. It will be observed that the largest production during each of the last three years has been from the Province of Ontario, British Columbia occupying second place. These two Provinces together contributed about 64 per cent of the total production in 1910. The Province of Alberta now occupies fourth place in mineral production, displacing Quebec, which drops to fifth position.

The last table shows the mineral production by provinces for the years 1899 to 1910 inclusive.

Mineral Production by Provinces, 1908, 1909, and 1910.

Province.	1908.		1909.		1910.	
	Value of Production.	Per cent of Total.	Value of Production.	Per cent of Total.	Value of Production.	Per cent of Total.
	$	%	$	%	$	%
Nova Scotia	14,487,108	16·93	12,504,810	13·62	14,195,730	13·29
New Brunswick	579,816	0·68	657,035	0·71	581,942	0·54
Quebec	6,372,949	7·45	7,086,265	7·72	8,270,136	7·74
Ontario	30,623,812	35·79	37,374,577	40·70	43,538,078	40·76
Manitoba	584,374	0·68	1,193,377	1·30	1,500,359	1·40
Saskatchewan	413,212	0·48	456,246	0·50	498,122	0·47
Alberta	5,122,505	5·99	6,047,447	6·58	8,996,210	8·42
British Columbia	23,704,035	27·71	22,479,006	24·48	24,478,572	22·92
North West Territories	3,669,290	4·29	4,032,678	4·39	4,764,474	4·46
Dominion	85,557,101	100·00	91,831,441	100·00	106,823,623	100·00

Mineral Production of Nova Scotia, 1909 and 1910.

Product.		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Gold	Ozs.	10,193	210,711	7,928	163,891
Iron ore exports	Tons	.....	.....	18,134	51,330
Pig iron from Canadian ore (b)	"	10,452	104,520	4,787	57,444
Coal	"	5,652,089	11,354,643	6,431,142	12,919,705
Grindstones	"	312	3,204	3,586	43,700
Gypsum	"	345,682	364,379	400,455	458,638
Barytes	"	179	1,120	.....	.....
Tripolite	"	.....	.....	22	134
Clay products		.....	188,185	.....	204,782
Stone		.....	189,604	.....	227,635
Lime	Bus.	57,730	16,729	55,750	13,490
Other products (a)		.....	71,715	.....	54,981
Total		.....	12,504,810	.....	14,195,730

(a) Includes in 1910 antimony, arsenic, and cement; in 1909 antimony, arsenic and cement.
(b) The total production of pig iron in Nova Scotia in 1910 was 350,287 tons valued at $4,203,444, and in 1909, 345,380 tons valued at $3,453,800.

Mineral Production of New Brunswick, 1909 and 1910.

Product.		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Iron ore exports	Tons.	.....	.....	5,336	15,075
Coal	"	49,029	98,496	55,455	110,910
Grindstones	"	3,963	51,460	387	3,496
Gypsum	"	98,716	226,975	90,236	213,579
Mineral water		.....	14,003	.....	16,000
Petroleum	Bls.	.....	.....	1,485	1,826
Clay products		.....	65,570	.....	56,475
Lime	Bus.	697,466	154,151	470,050	105,593
Stone		.....	42,180	.....	58,988
Other products		.....	4,200	.....	.....
Total		.....	657,035	.....	581,492

Mineral Production of Quebec, 1909 and 1910.

Product.		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Gold	Ozs.	193	3,990	124	2,565
Copper	Lbs.	1,088,212	141,272	877,347	111,757
Pig iron from Canadian ore (*b*)	Tons.	3,960	104,289	2,474	65,156
Silver	Ozs.	13,233	6,815	7,593	4,061
Asbestos and asbestic	Tons.	87,300	2,301,773	102,215	2,573,603
Chromite	"	2,470	26,608	299	3,734
Feldspar	"	97	1,712	90	1,800
Magnesite	"	330	2,503	323	2,160
Mica	"	.....	93,290	.....	87,295
Ochres	"	3,940	28,096	4,813	33,185
Mineral water	"	.....	68,565	.....	68,194
Peat		.....	.....	70	280
Phosphate	Tons.	525	4,804	1,456	12,386
Pyrites	"	35,300	130,009	24,242	102,162
Quartz	"	.....	.....	805	1,006
Graphite	"	134	10,178	155	16,000
Cement	Bls.	1,011,194	1,314,550	1,563,714	1,954,646
Clay products		.....	1,153,830	.....	1,442,842
Lime	Bus.	1,281,827	315,632	1,227,555	299,126
Slate	Squares.	4,000	19,000	3,959	18,492
Stone		.....	1,359,349	.....	1,469,686
Total		.....	7,086,265	.....	8,270,136

(*b*) The total production of pig iron in Quebec in 1910 was 3,237 tons valued at $85,255; in 1909,, 4,770 tons valued at $125,623.

There was also in this Province an important production of aluminium from imported ores.

Mineral Production of Ontario, 1909 and 1910.

Product.		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lbs.	15,746,699	2,044,237	19,259,016	2,453,213
Gold	Ozs.	1,569	32,425	3,089	63,849
Pig iron from Canadian ore (*b*)	Tons.	135,032	2,013,406	97,645	1,528,249
Iron ore, exports	"	21,956	61,954	90,979	257,781
Nickel	Lbs.	26,282,991	9,461,877	37,271,033	11,181,310
Cobalt		.....	94,609	.....	51,986
Silver	Ozs.	24,822,099	12,784,126	30,366,366	16,241,755
Zinc ore	Tons.	895	8,950	576	5,760
Actinolite	"	.....	.....	30	330
Arsenic, white and arsenical ore	"	.....	64,100	.....	75,328
Corundum	"	1,491	162,492	1,870	198,680
Feldspar	"	12,686	38,664	15,719	45,867
Fluorspar	"	.....	.....	2	15
Graphite	"	730	37,624	1,237	58,087
Gypsum	"	11,731	48,278	15,055	67,229
Mica	"	.....	54,484	.....	103,090
Mineral water		.....	92,610	.....	111,369
Natural gas		.....	1,145,307	.....	1,271,303
Peat	Tons.	60	240	771	2,324
Petroleum	Bls.	420,755	559,604	314,410	386,724
Phosphate	Tons.	473	3,254	22	192
Pyrites	"	29,344	92,812	29,628	84,902
Quartz	"	56,924	71,285	87,400	90,945
Salt	"	84,037	415,219	84,092	409,624
Talc	"	4,350	10,300	7,112	22,308
Cement	Bls.	2,462,027	3,084,218	2,504,650	3,150,479
Clay products		.....	3,425,841	.....	3,667,810
Lime	Bus.	2,619,553	434,147	2,988,020	476,137
Stone		.....	748,639	.....	898,788
Other products (*a*)		.....	383,875	.....	632,644
Total		.....	37,374,577	.....	43,538,078

(*a*) Includes in 1909 and 1910, sand-lime brick; sand and gravel (exports). (*b*) The total production of pig iron in Ontario in 1910 was 447,273 tons valued at $6,956,923; in 1909, 407,012 tons valued at $6,002,441.

Mineral Production in Manitoba, 1909 and 1910.

Product.		1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Gypsum	Tons.	17,000	170,000	19,500	195,000
Clay products		.....	559,008	.....	781,605
Lime	Bus.	423,954	69,670	606,679	100,808
Cement	Bls.	8,600	8,600	18,561	21,995
Sand-lime brick	No.	6,400,000	54,200	7,817,785	69,279
Other products (*c*)		.....	331,899	.....	331,672
Total		.....	1,193,377	.....	1,500,359

(*c*) Includes building stone, etc.

Mineral Production in Saskatchewan, 1909 and 1910.

Product.	1909.		1910.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Coal..... Tons.	192,125	296,339	181,156	293,923
Brick..... No.	14,416,770	144,316	14,733,340	160,850
Other products (a).....	.....	15,591	.....	43,349
Total.....	.....	456,246	.....	498,122

(a) Includes in 1909, sand-lime brick, fireclay, etc.; in 1910, sand-lime brick.

Mineral Production in Alberta, 1909 and 1910.

Product.	1909.		1910.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Gold..... Ozs.	25	525	89	1,850
Coal..... Tons.	1,994,741	4,838,109	2,894,469	7,065,736
Natural gas.....	.....	61,722	.....	75,168
Cement..... Bls.	.....	.....	323,009	774,473
Clay products.....	.....	442,486	.....	753,232
Other products (a).....	.....	704,605	.....	325,751
Total.....	.....	6,047,447	.....	8,996,210

(a) Includes in 1909, cement, lime, stone, etc.; in 1910, lime, sand-lime brick, and stone.

Mineral Production in British Columbia, 1909 and 1910.

Product.	1909.		1910.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Copper (*b*) ... Lbs.	35,658,952	4,629,245	35,270,006	4,492,693
Gold ... Ozs.	250,320	5,174,579	261,386	5,403,318
Lead ... Lbs.	45,857,424	1,692,139	32,987,508	1,216,249
Silver ... Ozs.	2,649,141	1,364,387	2,407,887	1,287,883
Zinc ore ...	17,476	233,749	4,487	114,243
Coal ... Tons.	2,606,127	8,144,147	3,330,745	10,408,580
Mineral water ...	...	...	...	4,000
Clay products ...	...	470,402	...	562,360
Lime ... Bus.	231,269	75,076	196,878	72,657
Stone ...	...	365,081	...	422,392
Other products ...	...	(*d*) 330,201	(*c*)	494,197
Total ...	...	22,479,006	...	24,478,572

(*b*) Smelter recoveries of copper. (*c*) Includes cement, sand-lime brick, etc. (*d*) Includes cement, sand-lime brick, and small value in refined antimony.

Mineral Production in Yukon, 1909 and 1910.

Product.	1909.		1910.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Copper ... Lbs.	...	...	286,000	36,431
Gold ... Ozs.	191,565	3,960,000	221,091	4,570,362
Silver ... "	45,000	23,176	87,418	46,756
Coal ... Tons.	7,364	49,502	16,185	110,925
Total ...	...	4,032,678	...	4,764,474

Mineral Production by Provinces, 1899-1910.

Calendar Year.	Nova Scotia	New Brunswick.	Quebec.	Ontario.	Manitoba.	Alberta.	Saskatchewan.	Yukon.	British Columbia.	Total.
	$	$	$	$	$	$	$	$	$	$
1899	6,817,274	420,227	2,585,635	9,819,557	17,108,707				12,482,605	49,234,005
1900	9,298,479	439,060	3,292,383	11,258,099	23,452,330				16,680,526	64,420,877
1901	7,770,159	467,985	3,759,984	13,970,010	19,297,940				20,531,833	65,797,911
1902	10,686,549	607,129	3,743,636	14,619,091	16,127,400				17,448,031	63,231,836
1903	11,431,914	580,495	3,585,938	14,160,033	14,082,986				17,899,147	61,740,513
1904	11,212,746	559,913	3,688,482	12,582,843	12,713,613				19,325,174	60,082,771
1905	12,507,047	559,035	4,405,975	18,833,292	11,387,642				22,386,008	69,078,999
1906	12,894,303	646,328	5,242,058	25,111,682	10,092,726				25,299,600	79,286,697
1907	14,532,040	664,647	6,205,553	30,381,638	898,775	4,657,524	533,251	3,335,898	25,656,056	86,865,202
1908	14,487,108	579,816	6,372,949	30,623,812	584,374	5,122,505	413,212	3,669,290	23,704,035	85,557,101
1909	12,504,810	657,035	7,086,265	37,374,577	1,193,377	6,047,447	456,246	4,032,678	22,479,006	91,831,441
1910	14,195,730	581,942	8,270,136	43,538,078	1,500,359	8,996,210	498,122	4,764,474	24,478,572	106,823,623

MINE PRODUCTION.

The statistics of metalliferous production published in the tables preceding, show in most cases the quantities of metals recovered or probably recoverable.

A general consideration of actual mine operations from the viewpoint of the actual tonnage of ore mined, the quantities concentrated, and the tonnage shipped to smelters is also of much interest.

This Department has been endeavouring to obtain from every metalliferous mine operator in Canada an annual return with respect to:—

(1) The number of men employed and wages paid.

(2) The total tonnage of ores mined, the tonnage concentrated, and the quantities of concentrates produced.

(3) The tonnage of ores or concentrates shipped and the net value thereof.

(4) The quantities of metals as determined by settlement assays contained in the ores shipped, and the quantities of metals for which payment was made by the purchasing smelter or recovered by the operators' smelter.

While it has not been possible to obtain returns from every mine operator, the missing returns usually represent comparatively small productions and sufficient information is available to give a fairly close estimate of results.

The metalliferous ores mined in Canada fall naturally into a number of more or less broad groups, of which iron ores constitute a distinct class.

Milling gold ores, including certain dry ores shipped to smelters, may be considered as a second group.

The silver and silver-cobalt-nickel ores of Ontario fall naturally into a separate class, as do also the nickel-copper ores of the same Province. The silver-lead, and zinc ores chiefly of British Columbia may also be considered as a separate group.

A broad class of ores, mined in British Columbia chiefly, may be grouped under a general class known as gold-copper-silver ores. There is also a small production of copper pyrites ores and straight copper ores that may for convenience be grouped as copper ores. No record is available as to the amount of gravel handled in connexion with placer gold production.

Returns covering the year 1910, show that shipments were made from approximately 191 metalliferous mines, employing an average of over 8,800 men, to whom about $7,359,000 was paid in wages. The amount of ore mined exceeded 3,595,000 tons, and ores and concentrates shipped exceeded 2,978,000 tons, having a net value reported as about $29,050,000.

Metalliferous Mine Production, 1910.

—	No. of Mines	Men Employed		Wages paid.	Ores mined.	Ores and concentrates shipped.	Net value of shipments.
		Underground.	Surface.				
				$			$
Iron ores	8	971		443,998	335,768	259,418	574,362
Milling gold ores: concentrates shipped	47	969		725,989	138,021	8,997	793,080
Silver-cobalt-nickel	38	1,623	1,322	2,642,133	274,780	35,627	15,344,470
Nickel-copper ores	7	660	286	719,237	652,392	652,392	2,609,568
Copper ores	3	118	97	105,366	54,220	36,714	172,162
Silver, lead, and zinc ores	48	592	282	850,416	180,070	53,355 5,063	1,668,415
Gold-copper-silver ores	19	1,432	487	1,872,242	1,958,591	1,924,405	7,888,306
Shipping mines not reporting: Silver-lead	12				1,994	1,994	
Copper-gold	9						
	191	8,839		7,359,381	3,595,836	2,977,965	29,050,363

In the mining of non-metallic products, excluding petroleum and the structural materials and clay products, there were employed about 36,210 men earning in wages over $22,698,000. The total tonnage of products mined was 16,148,993, and the tonnage shipped 13,800,989, having a net value of $37,757,158.

The production of cement, clay products, stone, lime, etc., employed 17,259 men earning $7,547,000 in wages, and the products shipped had a net value of $19,627,592.

For the whole mining industry of Canada in 1910, excluding placer gold and petroleum, there were employed over 62,000 men earning over $37,600,000 in wages.

SMELTER PRODUCTION.

Statistics of the production of copper and lead smelters, showing the tonnage of ore treated, the matte, blister, base bullion, or refined metal produced, etc., were collected for the first time by this Branch in 1908 and were published in the report for that year. Similar returns have also been received covering the years 1909 and 1910, through the courtesy of the following operating companies:—

The Mond Nickel Company,	Victoria Mines, Ont.
The Canadian Copper Company,	Copper Cliff, Ont.
The Coniagas Reduction Company,	Thorold, Ont.
The Deloro Mining and Reduction Company,	Deloro, Ont.

The Consolidated Mining and Smelting Company of Canada,	Trail, B.C.
[1] The Northport Smelting and Refining Company,	Northport, Wash., U.S.A.
The Granby Consolidated Mining, Smelting and Power Company,	Grand Forks, B.C.
The British Columbia Copper Company, Limited,	Greenwood, B.C.
The Tyee Copper Company, Limited,	Ladysmith, B.C.
The Canadian Antimony Company,	St. George, N.B.

The aggregate quantity of ore and concentrates treated in these works during 1910 was 2,683,714 tons, as compared with 2,376,148 tons in 1909, and 2,218,395 tons in 1908.

The ores may be conveniently classified as shown in the following table:—

—	1908.	1909.	1910.
	Tons.	Tons.	Tons.
Nickel-copper ores	360,180	462,336	628,947
Silver-cobalt-nickel-arsenic ores	7,182	8,384	9,466
Lead and other ores treated in lead furnaces	53,545	54,539	57,549
Copper-gold-silver ores	1,797,488	1,850,889	1,987,752
Total	2,218,395	2,376,148	2,683,714

The products obtained in Canada from the treatment of these ores include: refined lead produced at Trail, B.C., and fine gold, fine silver, copper sulphate, and antimony produced from the residues of the lead refinery; silver bullion, white arsenic, nickel oxide and cobalt oxide produced in Ontario, from the Cobalt District ores; refined antimony, produced in New Brunswick. In addition to these refined products, blister copper, copper matte, nickel-copper matte, and speiss resulting from the treatment of the Cobalt ores, are produced and exported for refining outside of Canada.

The aggregate results of smelting and refining operations may be summarized as shown in the next table. Unfortunately the figures cannot be taken to represent the total production from smelting ores mined in Canada, since considerable quantities of copper and silver ores are still shipped to other smelters outside of Canada for smelting.

It should also be explained that the figures include the results of the treatment of a small quantity of imported ores.

[1] The Northport smelter when in operation treated Canadian ore, almost exclusively, and for statistical purposes has been considered as if located in Canada.

Smelter and Refinery Production in Canada, 1908, 1909, and 1910.

	1908.		1909.		1910.	
	Refined products	Metals contained in matte, blister, base bullion, and speiss.	Refined products	Metals contained in matte, blister, base bullion, and speiss.	Refined products	Metals contained in matte, blister, and base bullion.
Antimony.....Lbs.	.....	.....	61,207	.....	.....	.....
Gold.....Ozs.	15,436	203,300	18,241	200,129	13,298	197,181
Silver..... "	11,168,689	3,271,899	14,242,545	4,845,920	16,373,799	2,136,414
Lead.....Lbs.	36,549,274	1,116,792	41,883,614	3,973,810	32,987,508	.....
Copper..... "	.....	51,965,289	.....	53,328,583	.....	56,149,299
Copper sulphate "	203,379	.....	51,405	.....	163,228	.....
Nickel..... "	.....	19,506,251	.....	27,041,957	.....	37,587,676
Cobalt..... "	.....	692,170	.....	1,321,083	.....	.....
White arsenic. "	1,431,052	.....	2,258,087	.....	3,003,467	.....
Arsenic..... "	.....	436,787	.....	1,074,516	.....	.....

Smelter products shipped outside of Canada for refining were: blister copper, carrying gold and silver values, 13,918 tons in 1910, as compared with 14,239 tons in 1909, and 15,418 tons in 1908; copper matte carrying gold and silver values, 11,519 tons in 1910, as against 11,597 tons in 1909, and 7,649 tons in 1908; Bessemer nickel-copper matte carrying small gold and silver values as well as metals of the platinum group, 35,033 tons in 1910, as compared with 25,845 tons in 1909, and 21,210 tons in 1908; lead bullion carrying gold and silver values, none in 1910, 2,010 tons in 1909; speiss resulting from the treatment of the Cobalt District ores carrying silver, cobalt, nickel, and arsenic values is also to some extent exported for refining though much of this material is returned to the furnaces.

Nickel-Copper Ores.—The smelters of the Canadian Copper Company at Copper Cliff and the Mond Nickel Company at Victoria Mines treat the nickel-copper ores of the district. These ores consist of pyrrhotite and chalcopyrite, the nickel being chiefly contained in the mineral pentlandite disseminated through the ore. The greater part of the ore is roasted in open heaps. In 1908,[1] the total quantity of ore mined was 409,551 tons, while the quantity smelted was 360,180 tons. The quantity of Bessemer matte shipped was 21,210 tons, containing 7,503 tons of copper and 9,572 tons of nickel. In 1909 the quantity of ore mined was 451,892 tons, while the quantity smelted was 462,336 tons. The quantity of Bessemer matte produced was 25,845 tons, containing 7,873 tons copper and 13,141 tons of nickel.

In 1910 the total quantity of ore mined was 652,392 tons, while the quantity smelted was 628,947 tons. The quantity of Bessemer matte produced was 35,033 tons, containing 9,630 tons of copper and 18,636 tons of nickel.

Statistics of the smelter production from these ores are available since the commencement of the industry and are shown in the following table:—

[1]See also the statistics given in the chapter on nickel.

Smelter Production of the Nickel-Copper Ores of the Sudbury District.

Calendar Year.	Ore Mined.	Ore Smelted.	Matte Shipped.	Value Matte.	Nickel content of Matte.	Copper content of Matte.
	Tons.	Tons.	Tons.	$	Tons.	s.
1886	3,307					
1887	567	30,000			900	1,500
1888						
1889	44,990	40,146	3,274		432	733
1890					718	651
1891	83,300	72,558	10,336		2,018	2,064
1892	74,381	57,022			1,207	1,102
1893			9,425		1,991	1,821
1894	103,223	96,038	11,681	766,422	2,454	2,604
1895	74,135	68,618	10,188	890,834	1,944	2,288
1896	94,966	71,027	10,759	416,594	1,699	1,584
1897	93,154	96,370	13,968		1,999	2,750
1898	123,820	121,924			2,759	4,187
1899	159,957	172,761		702,341	2,872	2,834
1900	196,420		23,336	1,076,306	3,540	3,364
1901	315,692	255,958		1,661,839	4,594	4,318
1902	269,538	211,847	25,311	1,327,448	5,347	3,553
1903	136,033	207,030	13,832	2,686,469	6,253	3,576
1904	203,388	118,470	10,154	2,193,198	5,274	2,455
1905	277,766	251,421	17,405	4,019,814	9,438	4,386
1906	343,814	340,059	20,310	4,628,011	10,745	5,264
1907	351,916	359,076	22,025	3,289,382	10,595	6,996
1908	409,551	360,180	21,210	2,930,989	9,572	7,503
1909	451,892	462,336	25,845	3,913,012	13,141	7,873
1910	652,392	628,947	35,033	5,380,064	18,636	9,630

Silver-Cobalt-Nickel-Arsenic Ores.—The rich silver ores of the Cobalt district, the first shipments of which were made in 1904, are still to a large extent shipped out of Canada, even for first treatment.

Three Canadian smelters are treating these ores, and silver bullion, white arsenic, and nickel and cobalt oxides are being recovered.

The Canadian Copper Company established works for the treatment of these ores at Copper Cliff in 1906 at which silver bullion and white arsenic are recovered. The Coniagas Reduction Company built a plant at Thorold, Ont., in 1908, for the treatment of the ores of the Coniagas mine and also custom ore, and the Deloro Mining and Reduction Company established works at Deloro, Ont., for the treatment of cobalt silver ores. At both of these latter plants, nickel and cobalt oxides are recovered in addition to silver bullion and white arsenic.

The treatment of these ores in Ontario in 1908, 1909, and 1910 gives the following results:—

		1908.	1909.	1910.
Ore treated	Tons	7,182	8,384	9,466
Products recovered:*—				
Silver produced†	Ozs.	9,212,650	12,239,542	14,574,839
White arsenic	Lbs.	1,431,052	2,258,087	3,003,467
Speiss or residues	Tons	1,326	2,660	3,074
Metallic contents of speiss:—				
Silver	Ozs.	2,612,344	4,103,251	.....
Nickel	Lbs.	363,140	758,966	.....
Cobalt	"	692,170	1,321,083	.....
Arsenic	"	436,787	1,074,516	.....

* Nickel oxide and cobalt oxide were also produced in small quantities.
† Fine ounces contained in silver bullion, fineness ranging from 850 to 998.

Lead Ores.—There was but one lead smelting plant in operation in Canada in 1910, viz., that at Trail, B.C., operated by the Consolidated Mining and Smelting Company of Canada, Limited. This smelter is supplemented by a lead refinery employing the Betts Electrolytic Process and having a capacity of 100 tons per day. The main ore supply comes from the St. Eugene mine, owned by the same Company, though practically all the lead ore produced in the Slocan district is smelted as customs ore. Supplementing the lead ores is a small tonnage of gold and silver ores, with some gold concentrates from stamp mills.

In the refinery, the bullion from the smelter is cast into anodes and redeposited electrolytically upon cathode starting sheets of refined lead. The refined lead is cast into pigs of 100 pounds and 180 pounds weight, the latter being a special form for the Chinese trade.

The slimes from the tank room carry gold, silver, antimony, arsenic, and copper. The first two are recovered as fine metals, and the copper as copper sulphate.

Antimony is recovered, though not regularly, and bearing metal is manufactured.

The annual production of refined lead, fine gold and silver, and of copper sulphate has been as follows:—

Calendar Year.	Refined Lead.	Fine Gold.	Fine Silver.	Copper Sulphate.
	Lbs.	Ozs.	Lbs.	Lbs.
1904	7,519,440	4,336	551,450	56,000
1905	15,804,509	8,602	1,088,328	77,175
1906	20,471,314	9,993	1,263,809	143,135
1907	26,607,461	10,395	1,631,422	97,751
1908	36,549,274	15,346	1,956,039	203,379
1909	41,883,614,	18,241	2,003,003	51,405
1910	32,987,508	13,298	1,798,960	163,228

Gold-Silver-Copper Ores of British Columbia.—There are six copper smelters in British Columbia, in addition to the smelter at Northport, Wash., U.S.A., treating these complex ores.

The ores of the Rossland camp, of which gold is the chief constituent value, are smelted in the Trail copper furnace of the Consolidated Mining and Smelting Company, and at the Northport smelter. The low grade copper ores of the Boundary district are smelted locally at Grand Forks, Greenwood, and Boundary Falls, some also going to Trail.

On the coast the ores of this class are smelted at Ladysmith and Crofton, but a considerable tonnage is also shipped to United States smelters for treatment, while the local smelters are receiving some foreign ores. The Crofton smelter, which has not been in operation during the past three years, is owned by the Britannia Copper Syndicate, Limited. The Boundary Falls smelter was out of commission throughout 1909 and 1910.

The aggregate production of these smelters in 1908, 1909, and 1910, including the foreign ores treated, was as follows:—

——		1908.	1909.	1910.
Ore smelted	Tons	1,797,488	1,850,889	1,987,752
Smelter products—				
Matte	"	7,649	11,597	11,519
Blister	"	15,418	14,239	13,918
Metallic content of matte and blister—				
Gold	Ozs.	202,959	198,898	197,181
Silver	"	631,484	612,164	636,140
Copper	Lbs.	36,960,118	37,581,884	36,890,283

Trail Smelter.—Statistics of the production of the Trail smelter, including both the copper and lead smelters, have been published in the annual reports of the Company, the figures since 1906 having been as follows:—

Production of Trail Smelter.

Year Ending June 30.	Ore Smelted.	Metals Contained in Matte and Bullion Produced.			
		Gold.	Silver.	Lead.	Copper.
	Tons.	Ozs.	Ozs.	Lbs.	Lbs.
1906 (6 mos. only)	157,640	64,590	1,074,255	15,133,683	2,399,161
1907	222,573	69,168	1,100,271	20,383,083	3,443,310
1908	305,956	121,380	2,224,888	32,157,139	4,004,468
1909	347,417	114,920	2,443,475	43,675,077	4,637,631
1910	487,125	137,614	2,162,406	42,368,816	5,974,959
1911	388,785	119,067	1,458,758	24,026,015	4,421,988
Production from 1894 to June, 1911	2,847,469	1,017,123	18,458,631	224,898,570	47,875,802

Granby Smelter.—The smelting plants of the Boundary district are of particular interest on account of the low grade ore treated. These ores vary from 1 to 3 per cent in copper and from $1 to $3 in gold and silver, and over 1,000,000 tons are now annually smelted. There are three smelters in the district, the largest being that at Grand Forks, operated by the Granby Consolidated Mining, Smelting, and Power Company. The first furnace, of 300 tons capacity, was completed in 1890, and since that date the capacity of the plant has from time to time been increased, until at present there are eight furnaces with a capacity of about 4,500 tons per day. The converter plant, which was first installed in 1902, has now a capacity of 40,000,000 pounds per year.

The quantities of ores smelted and the total production of metals, shown in the next table, are as published in the Annual Report of the Company for the year ending June 30, 1910.

Ore Smelted and Metals Recovered at Granby Smelter.

Year ending June 30.	All Material Smelted.				Metals Produced.		
	Granby ore.	Foreign.		Total.	Gold.	Silver.	Copper.
		Ore.	Matte.				
	Tons.	Tons.	Tons.	Tons.	Ozs.	Ozs.	Lbs.
1901	169,087	7,832	.....	176,919	8,871	34,990	5,435,955
1902	293,645	4,454	3,001	301,100	30,786	274,511	10,836,851
1903	289,583	7,691	6,223	303,497	35,121	277,574	12,551,758
1904	516,059	36,182	4,290	556,531	54,493	275,935	16,020,986
1905	550,738	39,382	.....	590,120	42,980	215,449	14,224,692
1906	796,188	36,158	.....	832,346	50,020	316,947	19,939,004
1907	649,022	16,893	.....	665,915	32,738	201,337	16,410,576
1908	858,432	24,179	.....	882,611	40,068	300,204	21,092,288
1909	964,789	19,944	.....	984,733	45,760	335,520	21,901,528
1910	1,175,548	21,829	.....	1,197,377	48,752	356,746	22,754,899
1911	959,563	24,783	.....	984,346	41,707	343,178	17,858,860
Total	7,222,654	239,327	13,514	7,475,495	431,296	2,932,391	179,027,397

Greenwood Smelter.—At this plant, owned by the British Columbia Copper Company, there are three large furnaces having a total daily capacity of from 2,400 to 2,500 tons per day.

In the Annual Report of the Company for the year ending November 30, 1910, the General Manager, Mr. J. E. McAllister, refers to the smelting operations as follows:—

" The Reduction Works.

" In order to provide for the production of the Wellington Camp and Lone Star mines, as well as for ores purchased from the New Dominion Copper Company, it was decided in April to increase the capacity of the works. This was accomplished by lengthening two of the three blast furnaces each by 50 per cent, thereby acquiring an increased blast furnace capacity of one-third. Two electric locomotives were added to the equipment, one for the charging and the other for the slag railway, the converting department was enlarged by the extension of the building and the crane runway, as well as the addition of two more converter shells, and the capacity of the sampling mill was increased to 125 tons per hour. The total expenditure for enlarging the capacity of the works by one-third amounted to 5·3 per cent of the previous book value of the plant, and during the progress of construction, the works were constantly in operation. Material handled in operations, exclusive of coke, amounted to:—

British Columbia Copper Co.'s ore	399,353 tons.
Custom ores	36,575 "
Converter slag	5,744 "
	441,672 "

Included in the item of converter slag is 2,385 tons of custom ore and clay.

" 7,199,034 pounds of blister copper was produced from the above material handled, containing:—

Fine copper	7,143,456 lbs.
Gold	24,962 ozs.
Silver	84,180 ozs.

" Operating Costs.

" These have been adversely affected by the extensive construction in progress at different points and particularly at the reduction works, where the inconvenience of making changes while at the same time conducting a continuous process was most felt, and in addition the effect of the more expensive mining and freight of Wellington Camp ore is apparent.

" The yield in all three metals is higher than for the previous two years and the percentage of extraction has been greater, which has permitted of a material reduction in the cost per pound of copper produced, but the average price realized for copper shows a steady decline for the three years. As in the past, the operating costs bear all charges for development and renewals and the maintenance of the various plants in a high state of efficiency.

"The following tabulation gives a comparison of the principal items during the past three years:—

——	1908.	1909.	1910.
Yield of copper per ton of B. C. C. Co.'s copper bearing ore	17·8 lbs.	17·7 lbs.	18·0 lbs.
Yield of gold and silver per ton of B. C. Copper Company ores	$ 0.985	$ 1.03	$ 1.23
Average price realized for copper	13·504 cts.	13·08 cts.	12·778 cts.
Cost of producing, refining, and marketing per pound of fine copper, after crediting expenditure with gold and silver values	9·996 cts.	9·829 cts.	9·048 cts.
Cost per ton of ore handled including all charges from ore in place to sale of the contained metals	$ 2·632	$ 2·683	$ 2·730

The Ladysmith Smelter.—This smelter is owned and operated by the Tyee Copper Company, and was the only Canadian smelter in operation on the coast during 1908, 1909, and 1910. Both domestic and imported ores are treated, but the Company has not published details of its smelter operations during the past year.

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